CLAIMS:

1. A method for recording data in an optical recording medium wherein the optical recording medium includes a substrate, a protective layer and a plurality of information recording layers between the substrate and the protective layer and a laser beam is projected onto the plurality of information recording layers via a light incidence plane constituted by either the substrate or the protective layer, thereby recording data in the plurality of information recording layers, the method for recording data in an optical recording medium comprising steps of projecting a laser beam whose power is modulated between at least three levels including a level corresponding to a recording power, a level corresponding to an intermediate power lower than the recording power and a level corresponding to a bottom power lower than the intermediate power onto at least one information recording layer other than an information recording layer farthest from the light incidence plane and forming a recording mark in the at least one information recording layer other than the information recording layer farthest from the light incidence plane, thereby recording data therein.

2. A method for recording data in an optical recording medium in accordance with Claim 1, wherein the level of the bottom power is set so that a region of the at least one information recording layer other than the information recording layer farthest from the light incidence plane heated by irradiation with the laser beam whose power is set to the recording power can be cooled during irradiation with the laser beam whose power is set at the bottom power.

3. A method for recording data in an optical recording medium in

accordance with Claim 1, wherein the power of the laser beam is set to the bottom power when it is projected onto the end portion of each of the recording marks.

4. A method for recording data in an optical recording medium in accordance with Claim 2, wherein the power of the laser beam is set to the bottom power when it is projected onto the end portion of each of the recording marks.

5. A method for recording data in an optical recording medium in accordance with Claim 1, wherein the power of the laser beam is set to the intermediate power when it is projected onto a region between neighboring recording marks to be formed in the at least one information recording layer other than the information recording layer farthest from the light incidence plane.

6. A method for recording data in an optical recording medium in accordance with Claim 2, wherein the power of the laser beam is set to the intermediate power when it is projected onto a region between neighboring recording marks to be formed in the at least one information recording layer other than the information recording layer farthest from the light incidence plane.

7. A method for recording data in an optical recording medium in accordance with Claim 3, wherein the power of the laser beam is set to the intermediate power when it is projected onto a region between neighboring recording marks to be formed in the at least one information recording layer other than the information recording layer farthest from

the light incidence plane.

8. A method for recording data in an optical recording medium in accordance with Claim 4, wherein the power of the laser beam is set to the intermediate power when it is projected onto a region between neighboring recording marks to be formed in the at least one information recording layer other than the information recording layer farthest from the light incidence plane.

9. A method for recording data in an optical recording medium in accordance with Claim 3, wherein the power of the laser beam is modulated so that a time period during which the power of the laser beam is set to the bottom power for forming the end portion of each of the recording marks becomes longer as a linear recording velocity is higher.

10. A method for recording data in an optical recording medium in accordance with Claim 4, wherein the power of the laser beam is modulated so that a time period during which the power of the laser beam is set to the bottom power for forming the end portion of each of the recording marks becomes longer as a linear recording velocity is higher.

11. A method for recording data in an optical recording medium in accordance with Claim 7, wherein the power of the laser beam is modulated so that a time period during which the power of the laser beam is set to the bottom power for forming the end portion of each of the recording marks becomes longer as a linear recording velocity is higher.

12. A method for recording data in an optical recording medium in

accordance with Claim 8, wherein the power of the laser beam is modulated so that a time period during which the power of the laser beam is set to the bottom power for forming the end portion of each of the recording marks becomes longer as a linear recording velocity is higher.

13. A method for recording data in an optical recording medium in accordance with Claim 1, wherein data are recorded by employing an objective lens and a laser beam whose numerical aperture NA and wavelength λ satisfy $\lambda/NA \leq 640$ nm, and projecting the laser beam onto the optical recording medium via the objective lens.

14. A method for recording data in an optical recording medium in accordance with Claim 2, wherein data are recorded by employing an objective lens and a laser beam whose numerical aperture NA and wavelength λ satisfy $\lambda/NA \leq 640$ nm, and projecting the laser beam onto the optical recording medium via the objective lens.

15. A method for recording data in an optical recording medium in accordance with Claim 1, wherein the protective layer is formed of a light transmissible material and the laser beam is projected onto the plurality of the information recording layers via the protective layer.

16. A method for recording data in an optical recording medium in accordance with Claim 2, wherein the protective layer is formed of a light transmissible material and the laser beam is projected onto the plurality of the information recording layers via the protective layer.